Composting at NC Residential and Summer Camps

Residential camps generate food scraps from meal preparation, plate scrapings and left over or spoiled food. Many camps have horses, and thus have manure to also manage. Composting and vermicomposting are viable options for managing food scraps, horse manure and other types of organic waste materials.

Composting is the aerobic decomposition of organic materials by microorganisms under controlled conditions into a soil-like substance called compost. During composting, microorganisms such as bacteria and fungi break down complex organic compounds into simpler substances and produce carbon dioxide, water, minerals, and stabilized organic matter (compost). The process produces heat, which can destroy pathogens (disease-causing microorganisms) and weed seeds.

Vermicomposting is a process that relies on earthworms and microorganisms to help stabilize organic materials and convert them to a valuable soil amendment and source of plant nutrients. Vermicomposting is different from composting; it should not produce heat and does not require turning to keep the system aerated.

General Composting Regulations

Composting and vermicomposting are permitted activities by the State of North Carolina in order to protect the environment and the public. Two State agencies in the Department of Environment and Natural Resources (DENR) issue permits for composting facilities. The Solid Waste Section of the Division of Waste Management regulates facilities that compost food scraps, manure, yard debris, wood waste, paper products, municipal and industrial waste, and sewage sludge (http://portal.ncdenr.org/web/wm/sw). The Division of Water Quality regulates facilities that compost manure and other organic materials in large quantities (http://portal.ncdenr.org/web/wq/ws/su/npdessw).

The two Divisions have an agreement that if 51% or more of the nitrogenous organic material to be composted is food waste, then the Division of Waste Management issues the permit. If 51% or more of the waste is manure, then the Division of Water Quality is the regulatory agency issuing the permit.

Nitrogenous waste contains high amounts of nitrogen. Examples include food waste, manures, coffee grounds, vegetable scraps, grass clippings, hay, alfalfa, and garden waste.

Composting facilities in North Carolina are classified based on the type and amount of materials to be composted as defined in the North Carolina Solid Waste Compost Rules 15A NCAC 13B .1400 et seq. Here is a summary of the materials accepted at Type I – IV facilities:

- Type 1: Yard debris, wood scraps
- Type 2: Pre-consumer food residuals (no meat), source-separated paper
- Type 3: Manures, post-consumer food scraps, meats
- Type 4: Mixed municipal solid waste, sewage sludge, industrial wastes

Since camps produce food scraps and may also generate manure, they would come under the Type III facility rules. Type III siting and design requirements state that composting facilities must be:

- Outside the 100-year floodplain
- 100 feet or greater feet from property lines
- 200 feet or greater feet from dwellings (small facility)
- 100 feet or greater feet from wells
- 50 feet or greater from perennial streams and rivers
- 25 feet or greater from swales or berms
- 2 feet from Seasonal High Water Table
- Outside wetlands

Although the Section .1400 rules do not mention vermicomposting, the State does require vermicomposting activities to be regulated under that rule. Vermicomposting is regulated on a case-by-case basis, but for camps, it would have to meet similar criteria as for composting.

Composting Regulations for Camps

Residential camps that are planning to set up a compost site should determine if they mostly have food waste or manure to compost. If manure comprises 51% or more of the nitrogenous compost mix, the camp will be required to use the composting rules established by the Division of Water Quality (DWQ). However, camps with fewer than 75 horses are exempt from permitting by DWQ.

If food scraps comprise 51% or more of the nitrogenous waste stream designated for composting at camps, then the Division of Waste Management (DWM) makes the permitting decision. DWM considers camps to be educational projects; therefore the permitting rule used is similar to that for schools (Section .1409D). Under the following conditions, camps are NOT required to obtain a State permit:

- Compost less than 1 cubic yard of nitrogenous material per week
- Do not compost waste from sources outside of the camp
- Will not use the compost product on food crops grown at the camp or distribute the compost to the public or allow camp participants to take the compost home with them.

Camps that do not meet these criteria will need to obtain a Type 3 Small Compost Facility permit issued by the Division of Waste Management, Solid Waste Section. Type 3 permits are separated into small and large facilities depending on the area and the volume of material received. Small facilities receive less than 1000 cubic yards of material for composting per quarter (within three months) and use less than two acres of land for composting. Composting facility rules are under Section .1400 – Solid Waste Compost Facilities and are posted on-line at http://portal.ncdenr.org/c/document_library/get_file?uuid=392d4769-06a2-4b75-b69b-41963b625ce4&groupId=38361

Before applying for a Type 3 permit, contact the Solid Waste Section and ask if you can obtain a Demonstration Permit, which allows you to start the composting process without completing all of the zoning, stormwater and wastewater permits. The Demonstration Permit lasts for 12 months and may be renewed one more time for another year. Compost Pilots and Demos: Guidelines for the Application Process is a user-friendly document to help potential composting facilities to apply for a Demonstration Permit (http://portal.ncdenr.org/c/document_library/get_file?uuid=31812226-9db0-4f78-b50f-84498c2c33f4&groupId=38361).

Guidelines for Using Manure and Food Waste Compost at Camps

Manure and food waste composts or mixtures can be valuable soil amendments and should be utilized in ways that will be practical while minimizing risks to both plants and humans. Composting is not highly technical; however, it is an active process that involves management and oversight to ensure maximum biological activity (decomposition) and pathogen reduction. Failure to properly manage the process can result in damage to crops, surface water contamination and the introduction of pathogens into the food supply. Due to these risks, great caution must be used in making compost application decisions.

The following guidelines are recommended:

- If possible, avoid using manure, food waste or mixed compost on edible crops. Well
 managed compost could be applied to pastures or landscaped areas with minimal risk.
 Use plant based (non-food) or purchased "STA certified"* organic matter materials on
 the vegetable garden.
- 2. If manure, food waste or mixed compost must be used on a garden, apply the compost in the fall AFTER the plants are harvested. Applying compost during the growing season dramatically increases the risk of human disease transmission and plant related problems.

3. Be aware of herbicides used on the pasture that may be present in manures. The herbicide active ingredients of greatest concern are *picloram*, *clopyralid*, and *aminopyralid*. These chemicals can remain active in hay, grass clippings, piles of manure and compost for an unusually long time. This is another reason to consider applying the manure compost only to the pasture.

Composting Methods

There are several methods for composting including:

- Turned windrows
- Aerated static piles
- Bins
- In-vessel
- Vermicomposting

Managing compost systems requires the proper mixing of feedstock material, monitoring temperatures and moisture and providing aeration by either turning or using passive or mechanical systems. A compost system should be tailored to match the size of your waste stream and the physical, topographical and labor constraints of your operation. For more information about composting, go to http://www.bae.ncsu.edu/topic/composting/pubs/ag593-large-scalecompost.pdf

Technical assistance and possible cost share aid may be available through your local Cooperative Extension Center, Soil and Water Conservation District and USDA Natural Resources Conservation Service (NRCS).

Additional Resources

- Contact your local Cooperative Extension office http://www.ces.ncsu.edu
- Contact your local Department of Public Health http://www.ncalhd.org/county.htm
- GAPs http://ncsu.edu/enterprises/ncfreshproducesafety/good-agricultural-practices-gaps/
- NC State/Cooperative Extension http://www.bae.ncsu.edu/topic/composting
- Cornell Waste Management Institute/Cooperative Extension http://cwmi.css.cornell.edu/
- U.S. Composting Council http://www.compostingcouncil.org/

*"STA certified" compost has been tested through the Seal of Testing Assurance program of the U.S. Composting Council; details are at http://compostingcouncil.org/sta-benefits/

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September 2012